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Anatomical Variations

FOR 1883.

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*REPRINT.*

BROOKLYN, N. Y.,  
ANNALS OF ANATOMY AND SURGERY.

1883.



ON SOME ANATOMICAL VARIATIONS, WITH  
REMARKS ON THEIR MORPHOLOGY.

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THE variations described below are some of the most interesting that were noticed in the anatomical rooms of McGill University during the winter session, 1882-3.

MENTO-HYOID OR HYO-MENTAL MUSCLE.

Three examples of this muscle were noted; two on the left side and one on the right. It was once seen on both sides of the same subject. In the first case this muscle consisted of a small slip quite distinct from the anterior belly of the digastric. It arose from the lower jaw near the symphysis, internal to the attachment of the digastric, and passed downwards over the mylo-hyoïd muscle, to be inserted into the body of the hyoid bone. In this case the left digastric had two anterior bellies, the supernumerary one being given off from the fascia at the level of the hyoid bone.

The other two cases occurred in the same subject. The muscles arose, as usual, from the lower jaw, between the insertions of the digastric, but did not reach the hyoid bone. Spreading out as they descended, they ended in a strong fascia covering the mylo-hyoïd, and attached below to the hyoid bone. In the same subject the

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Reprinted from the *Annals of Anatomy and Surgery*, Vol. viii., No. 4,  
October, 1883.

right digastric gave off a small slip of muscle which passed beneath the mento-hyoïds, and blended with the mylo-hyoïd of the opposite side.

MacAlister<sup>1</sup> has fully described this muscle, and considers that it is a differentiated portion of the platysma. He mentions that, in one case, it blended with the genio-hyoïd, the intervening portion of mylo-hyoïd being absent. The last variety I have described approaches this form, the strong fascia into which the muscle is inserted would represent the subhyoïdean septum. The mento-hyoïd or hyo-mental exists normally in many animals—*e. g.*, the hippopotamus and bat. Prof. Humphry<sup>2</sup> considers that the anterior belly in man is formed from the middle portion of the hyo-mental, which accounts for its insertion near the symphysis. In the cases of mento-hyoïd narrated above, it is the inner portion of the hyo-mental which persists as well as the middle. The shifting insertion of the digastric into the jaw in many of the lower animals, according to Prof. Humphry,<sup>3</sup> is explained by the fact that its anterior belly may be formed by different parts of the hyo-mental in different animals. The hyo-mental (and, of course, the anterior belly of the digastric) is formed from the superficial brachio-cephalic stratum of muscle.

#### DOUBLE STYLO-HYOÏD.

This anomaly was met with five times; twice on both sides of the same subject. In all five cases the extra muscle took the place of the stylo-hyoïd ligament, and extended between the styloid process and lesser cornu of the hyoid bone passing beneath the hyo-glossus muscle. This arrangement is found in some of the edentata.

<sup>1</sup> Proceedings Royal Irish Academy, vol. xxv.

<sup>2</sup> Observations in Myology, p. 138.

<sup>3</sup> Loc. cit.

## CHONDRO-SCAPULAR.

This muscle occurred three times; once on both sides of the subject.

The first example met with was on the left side of a muscular male subject. It arose by a round tendon from the costal cartilage of the first rib, soon developed into a large fleshy belly, which, after running parallel to the clavicle for a short distance, crossed beneath it and passed over the subclavian artery, and between the supra-scapular vein and artery; continuing outwards, it ended by being inserted into upper border of the scapula immediately external to the notch, some of its fibres were attached also to the transverse ligament of the notch. In this subject, on the same side (left) there was no trace of a subclavius, and the omo-hyoid muscle arose from the middle of the clavicle. In the same subject, and on the left side, was a mento-hyoid muscle, and the anterior belly of the digastric was double. There was also a levator thyroideæ.

The other two examples of this muscle occurred in a muscular male subject. The course on each side was precisely the same. The muscle arose by a round tendon from the costal cartilage of the first rib, passed *over* the clavicle near its sternal end, and piercing the cervical fascia above the clavicle developed into a well-formed fleshy belly, which crossed the scalenus anticus muscle and third part of the subclavian artery, and was inserted into the root of the coracoid process. On each side the subclavius was of small size. I have now seen seven examples of this muscle, and with the exception of these two (occurring in the same subject), all passed *beneath* the clavicle. In the Norway rat, guinea pig, wombat, etc., this muscle exists as the sterno-scapular. In the horse it is a well-developed muscle. In the first case

described above, it would seem to have embodied the subclavius, as that muscle was absent. In animals without clavicles some authorities consider it the homologue of the subclavius.

## CLEIDO-OCCIPITAL.

Two examples of this muscle were seen. The first occurred on the right side of a male subject. It arose from the middle of the hinder border of the clavicle, and passed up as a muscular band two centimetres broad, and quite distinct from the sterno-mastoid, to be inserted into the occipital bone, between the trapezius and sterno-mastoid. The second case occurred on the left side of a female subject. It was not so well marked as the foregoing, as immediately before its insertion it blended with the sterno-mastoid. This muscle is well marked in the hedge-hog, mole, etc., and, according to Prof. Wood,<sup>1</sup> corresponds to the cephalo-humeral muscle of many of the lower animals.

## RECTUS STERNALIS.

On the left side of a male subject a well-marked example of this muscle was seen. The muscle arose from the costal cartilage of the fifth rib by a broad tendinous expansion, passed upwards over the fourth and third costal cartilages to the second, to which it was attached by a few aponeurotic fibres, the main portion, however, was attached to the first costal cartilage, and the inner portion ended in a tendon which, after crossing the first piece of the sternum, became continuous with the inner border of the sterno-mastoid of the opposite side. The muscle was in no way connected with the rectus abdominis, and was superficial to the pectoralis major (see Fig. 1).

<sup>1</sup> Proceedings Royal Society, 1870.

Prof. Turner,<sup>1</sup> in a most interesting essay on this muscle, holds that it is not, as was formerly supposed, homologous with the anterior or pectoral end of the rectus abdominis. The rectus, when prolonged upwards in the lower animals, is always beneath, or rather deeper than the great pectoral muscle. The rectus sternalis of man is always superficial, so Prof. Turner<sup>2</sup> regards it "as an additional rudiment in man of that very im-

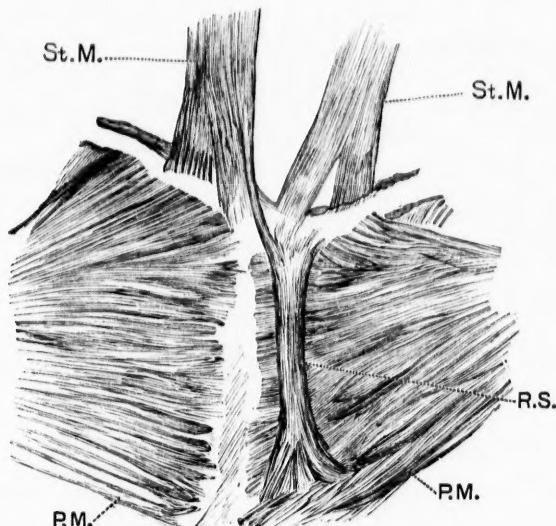


FIG. I. RECTUS STERNALIS MUSCLE.

R. S., rectus sternalis; St. M., sterno-mastoid; P. M., pectoralis major.

portant tegumentary muscle (the panniculus carnosus), though it must be admitted that the human platysma lies on a plane superficial to the fibres of the sternalis in those individuals in whom they co-exist." I have seen one case of rectus sternalis which was continuous with

<sup>1</sup> *Journal of Anatomy and Physiology*, vol. i.

<sup>2</sup> Loc. cit.

the platysma, but the case described above was directly continuous with the sterno-mastoid, and some anatomists (Henle, Theile, and others) consider this muscle a continuation downwards of the sterno-mastoid, as in man, when it exists, it is so often connected with the sterno-mastoid. In many mammals the attachments of the sterno-mastoids are continued backwards superficial to the pectoralis major.<sup>1</sup>

Dr. G. E. Dobson<sup>2</sup> looks upon the *musculus sternalis* "as homologous, not with the *panniculus carnosus* lining the integument, but with the sterno-cuticularis (sterno-facialis of the hedge-hog), which is found in many species of mammals springing from the sternum and attached to the deep surface of the *panniculus carnosus* either in front of or behind the anterior extremity." This, however, does not satisfactorily account for its continuation in many cases with the sterno-mastoid.

#### PECTORALIS MINOR.

In three cases this muscle blended with the coraco-brachialis, or more properly speaking, its lower border was inserted into the coraco-brachialis, forming at the point of junction a broad tendinous intersection. It was once seen having no insertion into the coracoid process, but the whole brachial end was fused with the coraco-brachialis for about two inches. This is an approach to the insertion of the pectoralis minor into the humerus, as is seen in quadrupeds and some of the carnivora.

#### DOUBLE CORACO-BRACHIALIS.

On the right side of a male subject the coraco-brachialis had two insertions: (1) the normal one into the inner side of the middle of the humerus, and (2) a second one

<sup>1</sup> Prof. Turner, loc. cit.

<sup>2</sup> *Journal of Anatomy and Physiology*, October 1882.

into the internal condyle of the humerus. The supernumerary portion arose with the normal muscle from the coracoid process, and consisted of a strong muscular slip which passed down the arm internal to it; after crossing the vessels and nerves of the arm about its middle, the slip became tendinous. This tendon blended internally with a broad aponeurotic band, which covered the internal portion of the triceps muscle and the ulnar nerve, and reached from near the head of the humerus to the internal condyle. The tendon proper of the muscular slip above described continued on, and was inserted into the lower part of the internal condyloid ridge. Prof. Wood<sup>1</sup> has fully described a similar anomaly, and mentions that he has met with three varieties of coracobrachialis muscle in man: (1) The normal arrangement, which he calls the coraco-brachialis proprius; (2) where the muscle is inserted into the internal condyle (coraco-brachialis longus); and (3) the rarest variety where the muscle is inserted into the capsule of the shoulder close to its insertion into the anatomical neck of the humerus, immediately below the lesser tuberosity. This has been described as the coraco-capsularis. Prof. Wood calls it the coraco-brachialis superior vel brevis. All these varieties exist normally in the lower animals. In a bear which I lately dissected, the short and long variety existed. In most of the quadrupeds there is a double insertion of this muscle, in the dog and cat the short variety alone exists,<sup>2</sup> and in the guinea pig the median variety only is present, as in man.

#### FLEXOR INDICIS.

On the right side of a male subject there was a distinct flexor indicis muscle, separated from the profundus by a

<sup>1</sup> *Journal of Anatomy and Physiology*, vol. i.

<sup>2</sup> Prof. Wood, loc. cit.

well-marked cellular interval. It was of considerable size, and arose from a small portion of the ulna, the interosseous membrane and a portion of the radius internal to the flexor pollicis; there was a well-marked tendinous intersection between it and the flexor pollicis. In the orang, chimpanzee, and gorilla, there is a distinct flexor indicis.<sup>1</sup>

#### FIBULO-ACCESSORIUS.

This supernumerary muscle arose on both sides of the same subject from the lower fifth of the posterior border of the fibula, its fibres blending with those of the peroneus tertius. Its course was then downwards behind the inner m<sup>a</sup><sup>1</sup> and posterior to the flexor hallucis, where it ended in a tendon which grooved the astragalus and os calcis, and was enclosed in a separate sheath; it finally ended by being inserted into the deep surface of the long flexor tendon with the accessorius. I have several times seen a similar slip, which arose from the lower part of the tibia (tibio-accessorius), but never before one quite like this. It probably was a differentiated portion of the longus hallucis. Its morphology I am unable to determine.

#### TRIPLE ANTERIOR COMMUNICATING ARTERY.

In the brain of a female subject the two anterior cerebral arteries were connected together by three distinct communicating arteries. They were of small size. I have frequently seen the anterior communicating artery so short that the two anterior cerebrals seemed fused together, but this is the first time I have seen it multiple. The two cerebral arteries in this case were separated by a considerable interval.

#### INTERNAL MAMMARY.

This artery was once seen to come off from the thyroid axis, and it, in another case, gave off the suprascapular.

<sup>1</sup> W. J. Walsham, St Bartholomew's Hospital Reports, 1880.

## ABERRANT ARTERY.

On the left side of a male subject, opposite the insertion of the latissimus dorsi, a large branch was given off from the brachial which passed down the arm internal and parallel to the brachial, and joined it again at the bend of the elbow. The main artery, after receiving the aberrant branch, almost immediately divided into radial and ulnar. The aberrant artery was quite as large as the brachial, which, in this instance, was smaller than usual.

## INTERNAL CIRCUMFLEX FROM THE DEEP EPIGASTRIC.

This occurred on the left side of a male subject. The epigastric arose from the external iliac, about half an inch above Poupart's ligament, and almost immediately gave off the internal circumflex. From this origin the internal circumflex passed beneath Poupart's ligament, within the femoral sheath (being enclosed in the same compartment as the common femoral), and continued down the thigh for nearly two inches, lying between the femoral vein and artery; it then gradually proceeded inwards across the femoral vein to dip down between the pectineus and psoas muscles. Before doing so, it gave off a large branch, corresponding to a portion of the profunda, which was distributed to the adductor muscles (see Fig. 2). The external circumflex was given off directly from the femoral, and the profunda did not come off till the main artery reached the apex of Scarpa's triangle. It was of small size. In a bear which I lately dissected, on both sides the internal circumflex was of large size, and was given off from the external iliac some distance above Poupart's ligament, and continued downwards within the femoral sheath, lying between the vein and the artery; about an inch below Poupart's ligament it proceeded to its destination by dipping down between the vein and artery. I have several times seen the internal circum-

flex and deep epigastric arteries given off from a common trunk, and once I noticed a common trunk for the internal circumflex, epigastric and obturator; but in all cases this occurred *below* Poupart's ligament. This is the first time I have seen this rare anomaly of the internal circumflex arising with the epigastric *above* the ligament. Mr. Arthur

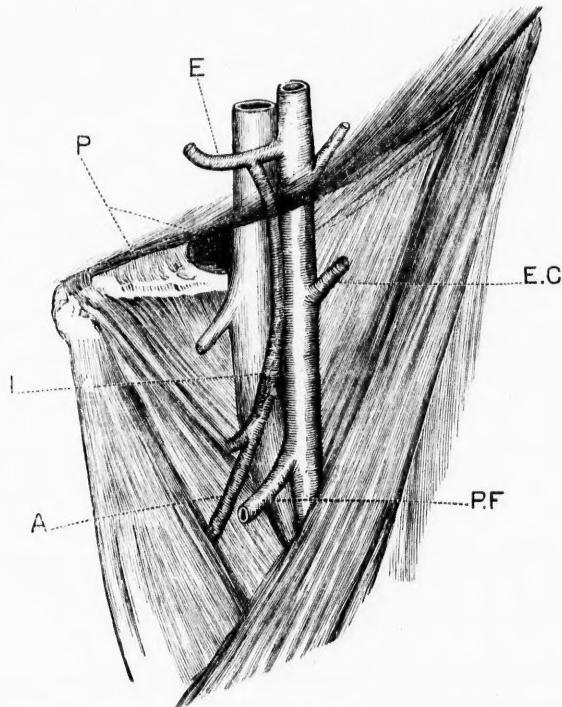


FIG. 2. ABNORMAL ORIGIN OF INTERNAL CIRCUMFLEX ARTERY.

*P.*, Poupart's ligament; *E.*, epigastric artery; *I.*, internal circumflex; *A.*, branch from circumflex to adductor muscles; *E. C.*, external circumflex; *P. F.*, profunda femoris.

Thompson,<sup>1</sup> in a recent number of the *Journal of Anatomy and Physiology*, gives an account of two cases in which there was this unusual arrangement of the arteries. In one case the internal circumflex, after leaving the epigastric, curved

<sup>1</sup> April, 1883.

inwards and downwards, lying internal to the femoral vein and winding to the inner side of the crural ring, where it gave off the external pudic. It then rested on the pectineus muscle, being bound down to it by strong fascia. The artery being in this position would, in the event of a hernia coming down, surround the neck of the sac, and, in case of operation, would be in danger of being wounded. It would, however, be a much simpler matter for the surgeon to secure it than an abnormal obturator.

In Mr. Thompson's second case the common trunk was larger, and crossed the external iliac vein at a point corresponding to the septum, between the compartment for the vein and crural canal, the artery pierced the sheath and split into the deep epigastric and internal circumflex, the latter crossed downwards, being in contact with and to the inner side of the vein. In this case, Mr. Thompson thinks, if a hernia had existed, it would have pushed the artery to the outer side, and the vessel would not have been in any danger should an operation for strangulated hernia have been needed.

#### LEFT SUPERIOR VENA CAVA.

This occurred in an old woman aged 70. The heart was considerably larger than normal, and its right side and the veins emptying into it were full of blood. The right cava and transverse innominate were not much reduced in size or length, and were normally placed. The persistent left cava, or rather the left duvel of Cuvier, passed down over the arch of the aorta and root of left lung, pierced the fibrous pericardium and joined the coronary sinus (which was much enlarged), and through it entered the right auricle. The opening into the auricle was of great size. The persistent vein was about the size of a common lead pencil, and received just below the point where the transverse branch was given off a large vein which returned the blood from the upper four intercostal spaces. The azygos veins were nor-

mal. The thyroid veins emptied into the transverse branch. This is the second example I have seen of this anomaly in two hundred and fifty subjects; both occurred in adults. In my other case<sup>1</sup> the persistent vein was much larger. Both specimens are now preserved in the museum of McGill University. This arrangement of the veins is the normal one in birds and some mammals, as, *e. g.*, the rabbit. Mr. Marshall has ably worked out the development of the great veins of the neck, and has fully described the cause of this anomaly. Mr. Walsham<sup>2</sup> has, lately, very fully described a well-marked case of persistent left cava.

#### LARGE OCCIPITAL SINUS.<sup>3</sup>

The right occipital sinus was twice seen, of very large size—quite as large as the ordinary lateral. In both these cases the lateral sinus was so small that it would only admit a probe. J. T. Knott<sup>3</sup> has, lately, fully described the variations of the lateral sinuses.

#### DISPLACED KIDNEYS.

In an elderly female subject, who had borne children, the kidneys were seen two inches lower than normal. The lower end of the left kidney rested on the external iliac artery, the lower end of right in the iliac fossa. The upper end of each kidney was below the last dorsal vertebra. The left kidney received two branches from the aorta—one given off normally entered the hilus, the other was given off from the aorta just above its division and entered the extreme lower end of the kidney. On the right side the renal artery, before entering the hilus, divided into four branches. From the position of the supernumerary renal to the left kidney, I should judge that the left kidney, at any rate, was congenitally misplaced. Both kidneys were firmly fixed in their abnormal position.

<sup>1</sup> Montreal General Hospital Reports, vol. i., 1880.

<sup>2</sup> St. Bartholomew's Hospital Reports, 1880.

<sup>3</sup> Proceedings of International Medical Congress, 1881, vol. i.